ACC.11
60th Annual Scientific Session & Expo

E535
JACC April 5, 2011
Volume 57, Issue 14

GENERAL CARDIOLOGY: HYPERTENSION, PREVENTION AND LIPIDS

PROFILING SERUM MARKERS OF INFLAMMATION AND FIBROSIS ACROSS THE SPECTRUM OF HYPERTENSIVE HEART DISEASE; TIMP1 AND MMP9 IDENTIFY AN AT-RISK ASYMPTOMATIC GROUP

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
Sunday, April 03, 2011, 3:30 p.m.-4:45 p.m.

Session Title: Cardiovascular Complications in Hypertension: Current and Emerging Predictors
Abstract Category: 16. Hypertension
Session-Poster Board Number: 1047-298

Authors: *Patrick Collier, Chris J. Watson, Victor Voon, Dermot Phelan, Aftab Jan, George Mak, Ramon Martos, John A. Baugh, Mark T. Ledwidge, Kenneth M. McDonald, UCD Conway Institute of Biomolecular and Biomedical Research, Dublin, Ireland, Heart Failure Unit, St. Vincent's University Hospital, Elm Park, Dublin, Ireland*

Background: Hypertension is one of the main drivers of the heart failure epidemic. This study profiled the biochemical natural history of hypertension across different stages of the hypertensive heart disease spectrum and also examined whether a particular fibro-inflammatory profile in patients with asymptomatic hypertension could identify those at higher risk of evolution to heart failure.

Methods: This was a cross-sectional observational study involving a population of 275 stable hypertensive patients divided into two different cohorts: Group 1: Diastolic Heart Failure [n=181]; Group 2: Asymptomatic Hypertension [n=94]. Asymptomatic patients were subdivided by left atrial volume index ≥34mls/m2 [n=30] and <34mls/m2 [n=64]. Study assays involved markers of inflammation [IL6, MCP1, IL8, TNFalpha], markers of collagen 1&3 metabolism [P1CP, P1NP, P3NP, C1TP], markers of extra-cellular matrix turnover [MMP2, MMP9, TIMP1] and the natriuretic peptide, BNP. Data were adjusted for age, sex, systolic blood pressure and creatinine.

Results: The presence of heart failure was associated with significantly higher levels of inflammatory markers (IL6, $p<0.001$; MCP1, $p=0.028$; IL8, $p<0.001$). Increased levels of collagen3 were also observed in heart failure patients (P3NP, $p<0.001$) with no increased concentration of collagen1 (P1CP, p=NS; P1NP, p=NS) despite evidence of heightened turnover of this protein (C1TP, $p<0.001$). Within an asymptomatic hypertensive population, we demonstrated that increased levels of MMP9 and reduced levels of TIMP1 identified patients with significant abnormalities in left atrial volume index ($p=0.041$, $p=0.007$ respectively).

Conclusions: These data define varying fibro-inflammatory profiles throughout the natural history of . In particular, the observations on MMP9 and TIMP1 may help identify a subgroup of patients with hypertension at high risk for progressive hypertensive heart disease and thereby facilitate focused preventative strategies.